



IOWA



# PROFILES IN soil health

Lynn Betts  
Guthrie County, Iowa  
17 acres  
Corn and Soybeans  
Covers: Cereal Rye & Radishes

unlock the  
**SECRETS**  
IN THE  
**SOIL**

## Soil Is Alive: Treat It That Way.

Most landowners who don't actively farm their land, especially those who live away from it, don't expect to or want to make day-to-day decisions on how the land is farmed. They leave that up to their tenant.

But that doesn't mean they don't have the right and the responsibility to set the tone for long-term care of their land. In fact, that's one of the most important things they can do, says Guthrie County, Iowa, absentee landowner Lynn Betts.

"In our case, Dad always believed in rotations and even better, keeping all the steep land in hay, pasture, or CRP land," Betts says. "When he began renting the land out 25 years ago, the only land in corn and soybeans was flat or gently sloping. He found a conscientious,



**Radishes were added to cereal rye** as a cover crop mixture meant to ease compaction and add diversity for faster soil building.

conservation-minded tenant in Bob Brummer," Betts says. "They talked a lot and our family knew there was an understanding that taking care of the land was a priority."



## Soil is Alive! Really?

Betts and his brother Darwin began making decisions on the family farm as trustees when their father, Rolland, died in 2010. “My younger brother Les and I each spent more than 30 years in conservation careers with the NRCS and SCS,” Betts says. “We were trying to help farmers hold onto the topsoil they had, promoting and explaining conservation practices like no-till farming. But there wasn’t much talk at that time about how to go the extra step to improve the soil.”

Betts says he was introduced to the concept of healthy soils after he retired in 2005 and began working as a freelance writer and photographer. “I started learning about healthy soils when Ron Nichols of NRCS asked me to write a series of articles on soil health a couple of years back,” Betts says. “It was new to me, but not to the farmers and experts I interviewed. They were the pioneers in soil health, who experimented and found out on their own how to take more advantage of natural soil building processes in farming systems.”

“What stood out to me was they kept saying the soil is alive. And if you buy into that, which I do, then it only makes sense to treat it that way,” Betts says. “The scientists told me that there are billions of bacteria, algae, and other soil microorganisms in the top layer of the soil—that if you could weigh all the critters in the top 6 inches of soil on an acre of land, depending on how healthy the soil is, they would total from 5,000 to 20,000 pounds! And that you can fit 40 million bacteria on the end of a needle!” Betts recalls.

“Once I thought more about the soil being alive, everything else they told me about improving soil health made perfect sense.”

## Listen and Learn

“Living away from the farm, I don’t have the advantage of watching other farmers who might be leading the way locally in soil improvement



**Cereal rye and radish plants** were up and growing well in late October, after being seeded by air into standing corn.

practices,” Betts says. “But I did have the advantage of being able to talk to farmers who had used cover crops for 10 to 20 years, for instance. I asked them every question I could think of, and listened to the details on how they changed their soils.”

Betts says he was impressed with how Gabe Brown, struggling to make a living after repeated hailstorms and drought in the 1990’s on his 629-acre North Dakota ranch, turned to no-till and cover crop cocktail mixes. “He didn’t have the money for commercial fertilizer, so he experimented with all kinds of cover crops, and stopped using fertilizer 10 years ago to allow his soil biology to change. Today he tries to have a cover crop on every acre every year. His first priority is to feed the soil, and he’s built organic matter levels from less than 2 percent to more than 5 percent on some fields, using no pesticides and no commercial fertilizers in the past 10 years.”

Dave Brandt, an Ohio farmer, has cut nitrogen use from 170 pounds an acre to 20 pounds an acre

where he's used cover crops and no-till for years. He produces his own nitrogen with hairy vetch, winter peas, and other cover crops. "Every cover crop on his farm has at least two species; he likes to have something growing on the land through the winter as much as he can to feed soil microbes through plant roots," Betts says. "He's reduced other inputs significantly, too, at the same time he's increased yields. That's what I'd like to see on our farm some day."

He's also looking forward to better water infiltration and seeing any water that leaves crop fields flow clear rather than muddy, something demonstrated to him by Wellman, Iowa, farmer Steve Berger. "Steve knew he was losing topsoil in the soybean rotation on his hills, even though he and his father had no-tilled for more than 25 years and had terraces," Betts says. "So they started using cover crops with no-till 10 years ago on all their land. That combination has given them much better soil structure and water infiltration. After a heavy rain, he took pictures and showed me how most of the water soaked into the ground, and what ran off was pretty clear. Steve and other farmers like him might warn you to expect some cover crop failures because of weather in some years, but they've convinced me to stick with it over time."

### Two years of cover crops

When Betts asked Brummer in the summer of 2013 if he would consider a trial strip of cover crops, his tenant agreed with no hesitation. "He was all for it. He'd been considering cover crops himself, and drilled cereal rye into some of his own soybean stubble after harvest, too," Betts says. "We both received government incentives that first year, but this last fall we both aerial seeded cereal rye and radishes into standing corn on our own. It's looking good so far," he says.

"What's more, Bob didn't apply anhydrous fertilizer this past fall. He's going to no-till soybeans into the cornstalks next spring and use liquid fertilizer as needed. That should be another step in the right



**Darwin (pictured) and Lynn Betts** took soil samples and used the Haney soil test to set a baseline to measure future soil health improvements against.

direction for the microbes in the soil."

### Set a benchmark

"Bob had soil tests taken last fall for a baseline on organic matter levels that we'll use in part to check on soil health," Betts says. "Darwin and I also took soil samples earlier this year and used the Haney soil health test to establish a baseline on the biological health of our soil."

Betts inherited the 17 acres of land that's been farmed with cover crops recently when the family trust was dissolved. That means he's got cover crops on all his cropland. "I know it's not much land, and I don't have the risk other absentee landowners might have," Betts says. "I know, too, that there could be bumps in the road. But I've just heard and seen too many positives with cover crops. I'm convinced they're the key to better soil health, and better water quality, too, for that matter. I can see using them for a long time."

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